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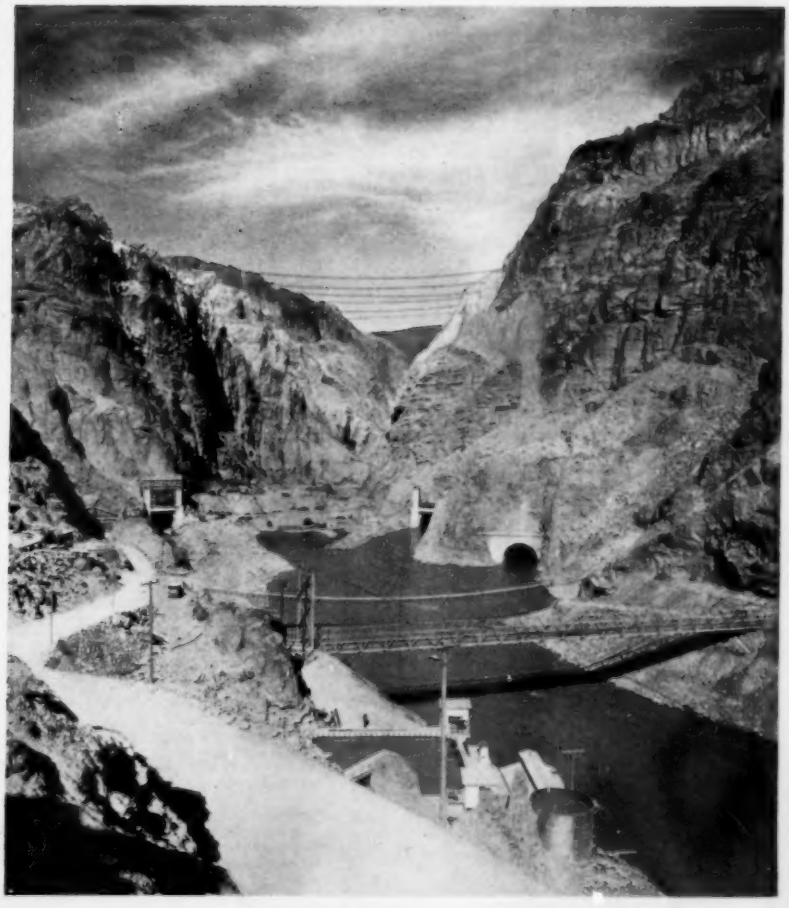
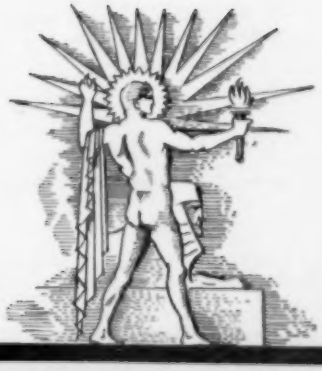
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •





MARCH 18, 1933

Infancy of a Giant

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SCIENCE NEWS LETTER

VOL. XXIII No. 623

The Weekly Summary of Current Science

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Edited by WATSON DAVIS

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DO YOU KNOW?

At tropical Java, ten miles "up," a temperature of 130 degrees below zero was found.

Fibro-cement tubes are finding use as a substitute for steel and cast iron tubes in France.

The ability to wiggle one's ears is considered a holdover from man's very remote ancestors.

Starling roosts in England are real bird mobs, consisting occasionally of hundreds of thousands of birds.

The box turtle can shut itself up safe from its enemies by drawing head and legs entirely inside its shell.

Electric heating cables are proving useful in giving warmth to lily ponds, hotbeds, and other places where it is desired to diffuse slight warmth uniformly.

The first person to report that some plants can produce light was the daughter of the botanist Linnaeus, who observed light radiating from nasturtium flowers at night.

Cabbage was one of the foods of ancient Egypt and Greece.

Chemists can produce synthetic woods that are harder than teak and others softer than cork.

Soap is being made on many American farms, extension agents of the Department of Agriculture report.

A baby walrus about ten months old and weighing almost 250 pounds is owned by the San Diego Zoological Society.

Discovery of 24 new double stars, found in the years since 1918, is reported by Dr. F. C. Leonard, of the University of California.

A government publication describes a new means of joining wood by metal connectors, which is expected to open up new uses for wood as structural material.

Geographical tongue is the popular name of a disease which creates irregular furrows, inflamed red areas, and white patches on the tongue, the result resembling a map.

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ZOOLOGY
What size rocks do beavers sometimes use in dam building? p. 168. *A Study of the Beaver in the Yancey Region of Yellowstone National Park—Edward R. Warren—Roosevelt Wild Life Forest Experiment Station. Annals, vol. 1, No. 1, 1926, $1.25.*

ZOOLOGY-PUBLIC HEALTH
What is Lico's championship? p. 165.

These curiosity-arousing questions show at a glance the wide field of scientific activity from which this week's news comes. Book references in italic type are not sources of information of the article, but are references for further reading. Books cited can be supplied by Book Dept., Science News Letter, at publishers' prices, prepaid in U. S.

SEISMOLOGY

Scientists, Not Surprised By Earthquakes, Expect Others

Though a Major Shock, Disturbance Probably Did Not Relieve Strain Elsewhere in Southern California

THE EARTHQUAKE which shook southern California March 10 was not much larger than the one that eight years ago (June 29, 1925) damaged Santa Barbara, and the great 1906 San Francisco earthquake was much larger. It will rank, however, as one of California's major earthquakes.

The probable origin of the quake, as determined from records at the Seismological Laboratory, Pasadena, was in the San Pedro Channel within the triangle formed by Point Firmin, Avalon on Catalina Island and Laguna Beach on the mainland.

Probably the worst is over in California so far as this earthquake is concerned. It is expected that shocks will continue for weeks, but it is usually the first shock that is strongest.

Drs. H. O. Wood and Charles O. Richter, seismologists in charge of the cooperatively maintained earthquake laboratory which is set in solid rock back of Pasadena, explained to Science Service.

"At just twenty second past 5:54 p. m. (March 10) our instruments began recording a moderately strong local shock which was sharply felt in the laboratory and which was evidently sufficient to cause damage near its source. The source appears to be sixty to seventy miles southeast of this laboratory, but because of peculiarities in the geological structure a precise distance cannot yet be given. A large number of aftershocks have been recorded with very brief interruptions. Three or four of these have been stronger than the rest and have been barely felt at the laboratory. One or two hundred shocks have been recorded on the less sensitive instruments and it is probable that the more sensitive instruments will record a great many more."

Six auxiliary seismologic stations placed at strategic points in California recorded the earth movements and Drs. Wood and Richter explained that a more precise location will be made after those stations report.

Seismographs in stations the width of the continent away from the stricken California region confirmed the accuracy of the determination of the center of the earthquake made by the scientists at Pasadena. Data wired to Science Service from a number of observatories, interpreted by the U. S. Coast and Geodetic Survey, indicated that the epicenter was located in latitude 33.7 degrees north, longitude 118.9 west, and that the quake began at 5:54.2 p. m., Pacific Standard Time. The epicenter location determined by the Coast and Geodetic Survey is in the San Pedro Channel, about 25 miles west of San Pedro Point. The epicenter determined by the Jesuit Seismological Association with headquarters at St. Louis University, using Science Service data, was latitude 32.8 degrees north, longitude 118.5 degrees west.

Reporting to Science Service

Seismological observatories reporting to Science Service were those of the Dominion Observatory, Ottawa; the Dominion Meteorological Service, Victoria, B. C.; the Jesuit Seismological Association stations at Canisius College, Buffalo, N. Y.; Fordham University, New York City; Georgetown University, Washington, D. C., and Mt. St. Michaels, Spokane, Wash.; the stations of the U. S. Coast and Geodetic Survey at Tucson, Ariz., Chicago, and Honolulu, T. H.; and the University of Michigan.

This earthquake had been expected by seismologists for over a decade, although few definite public predictions had been issued in consideration of public fears. Geologists studying the crust of the earth and earthquake specialists operating sensitive recording instruments and listing the past history of southern California earth movements felt that conditions were ripe for a serious earth disturbance in that region.

While residents of southern California had not in general recognized the existing earthquake danger, leading citizens and scientists cooperated to study the conditions.

Not for 78 years has the Los Angeles region suffered a large earthquake, although on July 8, 1929, a moderately severe shock was felt in the region surrounding Los Angeles and centering at Whittier. On June 21, 1920, the Inglewood earthquake occurred near Los Angeles and par- (*Turn to Page* 172)

SEISMOLOGY

Earthquake Trapped By Watchful Recorders

THE EARTHQUAKE in the Southern California region was "trapped" by new, inexpensively constructed and automatic seismographs installed about a year ago as the result of cooperative research between the U. S. Coast and Geodetic Survey and California scientific institutions. (*SNL, Aug.* 6, '32, *p.* 81).

The new seismographs were intended to register only local quakes and they begin making a record when an earth shock rocks the spot where they are placed.

Although earthquakes have engaged the attention of scientific men for many years and delicate instruments have been devised to detect them at a distance and tell how far away and how violent they are, strangely enough there

EARTHQUAKE WATCHMAN

Automatic seismograph designed to wait years for opportunity to make a record of an earthquake beneath it.

has not been until recently any instrument that could make a record of an earthquake occurring in the immediate neighborhood. The usual instruments are so delicately built that a strong earthquake directly under them would wreck them. The new instruments are more ruggedly built, record only relatively large earth movements near by, and turn themselves on automatically when a quake begins.

The distribution of these instruments was undertaken by the Federal Government largely as a practical aid to engineers and architects in designing and placing buildings so as to avoid earthquake damage as far as possible.

Science News Letter, March 18, 1933

PHYSICS

Cooperative Phenomena New Term in Physics

"COOPERATIVE phenomena" is a new term introduced into physics by Dr. F. Zwicky, of the California Institute of Technology, to designate what happens when a great number of elementary particles, such as electrons and atoms, interact.

Cooperative phenomena would explain the existence of crystals, Dr. Zwicky believes.

Four groups of problems in modern physics are listed by Dr. Zwicky in the *Physical Review*:

"(1) The problem of the nuclei of atoms and the existence of elementary particles such as the proton, the electron and the photon; (2) the problem of the interaction of the electromagnetic and the gravitational fields with matter and the problem of unifying the fields; (3) the problem of the universe as a whole; (4) the problem of cooperative actions of a great number of elementary particles, and, in particular, the problem of the solid state.

"The first three problems will probably necessitate radical changes of our current notions about time, space, causality, fields, etc.," he writes. "The fourth problem is of an entirely different nature inasmuch as it seems that no fundamentally new laws must be invented for its solution. The difficulty rather lies in our present inability to visualize the simultaneous cooperation of a great number of particles and the lack of mathematical methods to obtain exact solutions for sufficiently general cases of interactions between many elementary particles."

Science News Letter, March 18, 1933

DACTYLOGRAPHY

Fingerprints May Be Used to Protect Checks From Forgery

FINGERPRINTS to protect checks against forgery and theft.

This is seen as a possible outgrowth of the present banking situation if the proposal to expand the United States Postal Savings System to provide for checking accounts becomes a reality.

Fingerprints are required of all depositors and those withdrawing money from postal-savings depositories in the larger post offices today.

When you open your account and make your first deposit, your fingerprint is taken and filed with a description of you and other identifying material in that post office. To withdraw your money, you must go in person to that same post office and again have your fingerprint taken. If the fingerprints are identical, you get your money. But the forger or thief, if he should have the boldness to submit to the fingerprinting process, would betray his false identity.

If fingerprints were required on all checks, this would serve as practically a positive guaranty against forgery. For your fingerprint is your own personal property, and unlike that of any other individual in the world. Even the fingerprints of identical twins differ sufficiently so that they can be distinguished.

Expanding the Postal Savings System to allow depositors to draw negotiable or transferable checks on their accounts, might make it necessary to establish at a clearing house, a fingerprint file of the depositors in that locality with which all checks could be compared before payment. Such comparisons could be handled very quickly; the U. S. Bureau of Identification checks daily over 2,000 fingerprints against their file of over 3,000,000 prints, and in addition the criminal record of each individual is looked up and reports sent to all police systems interested. For the purpose of clearing checks it would only be necessary to look up the name in a card file and verify the print. It would not even be necessary to classify the print.

Fingerprints can be made easily without special equipment or any particular muss or bother. Just press the finger on a clean rubber stamp pad or other inked surface, then roll the finger firmly on the check.

Science News Letter, March 18, 1933

ZOOLOGY-PUBLIC HEALTH

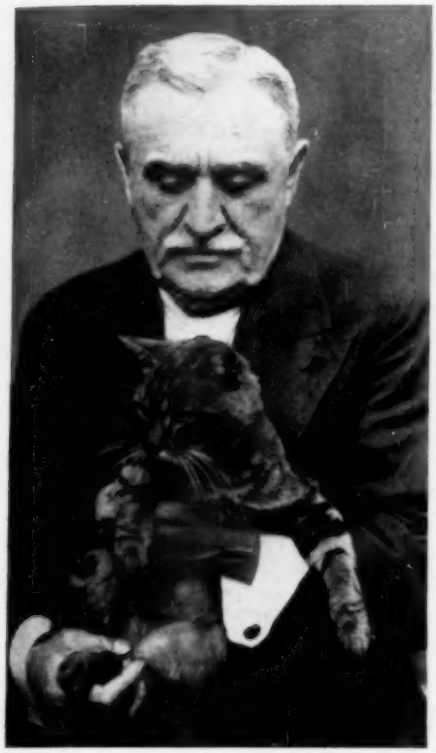
Rat-Catching Cats Are Bred To Protect France From Plague

SELECTIVE breeding of rat-catching cats is the best way to keep down rats in the opinion of Dr. Adrien Loir, medical officer of the port of Le Havre, France.

Dr. Loir's interest in the subject of rats and cats arises from the fact that rats may spread horrible bubonic plague. France, like other countries, keeps hourly guard on her ports lest plague-stricken rats, with infected fleas ready to pass on this scourge to human beings, gain entrance.

Dr. Loir recently reported the success of his cat breeding to the French Academy of Medicine, the most important forum of medical science in France. He discoursed before this gathering of learned men on such an apparently frivolous topic as his cat, Poupette, and another rejoicing in the name of Lico.

Lico is a champion and is first holder for 1930 of the cup of the Rat-Catching Cat Club of Normandy. The Rat-Catching Cat Club, which sounds like a tongue-twister, was founded by Dr. Loir, with its chief object the breeding of cats with a constant and intense craving for catching rats. Not all cats chase rats. Some establish a tacit neutrality pact with rats, with whom they may be seen in some streets at night, the one ignoring the other studiously. Such is not the case with Dr. Loir's cats.



LICO THE CHAMPION

In one dock area in Le Havre, in 1930, where as many as 145 rats were caught in only 8 days, there are now no more rats, Dr. Loir reported to the Academy. Five rat-catching cats, one of whom is Lico's son, patrol this area which the rats of Le Havre have learned to dread more than the plague itself.

One day Herriot, formerly Prime Minister, paid a visit to Le Havre, where he was so impressed by Dr. Loir's initiative that he begged a cat of him for the benefit of the town of which he was mayor, Lyon. It seemed that the abattoirs of Lyon were overrun by rats. It was the story of Dick Whittington all over again.

As Dr. Loir told the story, the Mayor of Le Havre was not deaf to this appeal. Le Havre was to come to the rescue of Lyon. A special credit was opened to allow the director of the abattoirs to receive Le Havre's envoy with the necessary distinction. Her name was Poupette, and the litter of kittens to which she gave birth shortly after her arrival was a practical gesture indicative of her appreciation of the hospitality she had enjoyed. On November 24, 1932, the director of the abattoirs wrote: "I wish to tell you that the abattoir of Lyon is completely rid of rodents of every size."

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ECONOMICS-PSYCHOLOGY

Prolonging of Life and Vigor Blamed for Economic Chaos

Old Men Control Politics and Industry, Says Biologist; Average Age of British Cabinet 57, Roosevelt's 58

CAPITALISM alone is not to blame for the economic situation of the world today, in the opinion of Prof. J. B. S. Haldane, the British biologist, but some of the difficulty must be charged to the fact that in our public thinking we have never considered the results of the prolongation of life which we owe to medicine.

Not only do many men live beyond 60, but they preserve a great deal of vigor, Prof. Haldane writes in a book of radio talks just published, "Science in the Changing World" (Century).

And that has brought about a control of economic life by old men, men whose intellects have not decayed but who can not keep pace with the rapid increase of knowledge. Such is Prof. Haldane's belief. He insists that the world will have trouble so long as it is not biologically minded.

Prof. Haldane says that the reasons for the present crisis are fairly simple, and the most important is this: Science has immensely increased our capacity for production. No attempt has been made to insure that the goods so produced could be distributed.

Not Adaptable

This lack of facing the situation he attributes to the age of the men in power. A man of 60 or over has generally gained a lot of experience of life, Prof. Haldane admits. But the man over 60 can not adapt himself easily to a new situation, and the present world situation is something entirely new. You can not expect old men to deal with it.

The average age of the British Cabinet (a year ago) was 57. None of them was under 40, and 9 of the 20 were over 60. In a former great national crisis, 150 years ago, William Pitt became Minister at 25, Prof. Haldane reminds us.

President Roosevelt's cabinet has an average age of 58. None is under 40 and 6 of the 10 are over 60. The Hoover cabinet when it went out of office had an average age of 61 years, with the youngest age 50 and 5 over 60.

"An electorate which thought in terms of human biology would see that at least a third of the Cabinet were under 40, and not more than a third over 60," Prof. Haldane contends. "They would also take measures to transfer the control of industry to younger men, whether its ownership was public or private.

Directors' Age 62

"Not only our politics, but our industry, is controlled by old men. The average age of the directors of a number of representative companies is 62. Neither capitalism nor any other economic system could keep abreast of the times under such guidance."

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ENGINEERING

Camera Pictures Beauty and Progress at Hoover Dam

See Front Cover

THE photographer for the U. S. Bureau of Reclamation has caught the spirit of the beginnings of Hoover dam in the picture reproduced on the front cover of this week's SCIENCE NEWS LETTER.

He was looking upstream toward the dam site when he snapped his camera. The structure will rise beneath the cables which appear as dim streaks stretching from rim to rim of the canyon in the background. The dry ground in the bed of the river before the cables is the coffer dam and rock barrier built to keep the water from backing up to where actual construction is going on.

Another coffer dam out of sight farther up the river turns water into the four diversion tunnels whose outlets are seen in this picture.

The pouring of concrete on the dam proper is scheduled to begin July 1, 1933 and end April 1, 1936.

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METALLURGY-ETHNOLOGY

Gold

By SCOTT TURNER, Director, U. S. Bureau of Mines.

PROBABLY the word gold is used more frequently in the language of metaphor than in direct reference to the metal itself. It will be found employed thus many times in almost any book, and it recurs constantly in our daily speech.

We refer to a Golden Age, a golden hour, a golden memory, the Golden Rule, and to silence that is golden. A golden fleece inspired the Argonauts to adventure; a Golden Edict granted rights to an oppressed people. There is a golden mean of conduct; the word of an honest man is as good as gold. There are golden voices, opportunities and opinions.

Things are said to be as pure as gold; a voice resembles liquid gold; worthy people have hearts of gold. Many uses of the word refer to its color and metallic luster, as golden sunset, golden hair, golden grain. Thus the word is employed to suggest not only a lustrous yellow metal, but purity, value, worth, merit, perfection, beauty, and other similar qualities that indicate the high esteem in which this element has long been held.

Yet gold is a metal, as iron, copper, lead, zinc, aluminum, and tin are metals. It resembles all of them in a general way, some of them closely; even its color can nearly be matched by brass, a mixture of copper and zinc, or by bronze, a compound of copper and tin.

Why then is gold so valuable and so important? Certainly not because it is yellow, heavy, malleable, ductile, and lustrous. The explanation is that this one metal is endowed with a particular combination of properties that made possible its ancient discovery, and led to its early utilization, to widespread longing for its possession, and finally to its use as a measure of worth and as a means of storing value for the future.

The human desire that results in gold being so highly prized is as old as history. It has persisted through thousands of years. During perhaps a hundred centuries, while nations rose and fell, as conflicting philosophies, religions, and the languages in which they were expressed, waxed and waned, mankind agreed in this at least: Every one wanted gold. This desire was paralleled in intensity and persistence only by the craving for food and other necessities of life, for which gold could be exchanged.

Throughout the ages, can man have been mistaken in his esteem of gold? Was he infatuated and beguiled by its yellow glitter, though not by the gleam of brass and bronze? Assuredly not. Though he was not aware of the numerous factors that jointly created gold's value, he was competent to judge whether a little gold would serve him as well, or better, for certain purposes, than many times its weight of brass or bronze,—and he decided that it would.

Never in Excess

One reason for his choice was his observation that, with gold, he could buy not only brass or bronze, but any other commodity, whenever he chose to do so, and that he need not hurry to trade it away, as he did when he invested in perishable commodities or those that cost something to store and keep; gold gave command of time. Man knew that until he decided what should be bought with his gold, he could secrete it or transport it more easily than other commodities of equal worth. In his purse, he could carry enough to pay for all the grain many beasts-of-burden could carry. Gold was so indestructible that if buried, it would not rust; even if melted by fire, it would still remain the pure bright metal. If its possessor traveled to a distant land where people spoke an alien tongue, they would nevertheless understand the worth of the gold he offered them in trade.

Gold was more stable in value than other commodities; all others varied more widely and more rapidly in price. Oversupply of many of them, due to seasonal production, was followed by depletion and dearth, because they were gradually consumed. The effect on prices is illustrated by the low cost of grain after harvest and the high price before it, or by the charge for fish after and before an unusual catch. Gold, however, was neither consumed nor supplied in great excess. Withdrawals and returns of gold, from and to circulation, tended to balance in the long run; if its value began to decrease because of oversupply, export of gold to other places, where it would buy more, tended to occur because it was so easily transported.

Hence, its price was fixed less by local than by wide demand, and it was therefore, more stable in relation to the mean of prices in general. The superior steadiness in the value of gold was naturally prized by the prudent, who were saving for the future and for old age. Just as insurance funds are invested to provide security above all else, so men of the past who wanted to store for future use sought gold in preference to other commodities as means to this end.

For these and similar reasons, it was not illogical that man used gold long before there was money. It was easily beaten into the desired form, and its softness helped to save it for special purposes, since it was not hard enough to be generally useful and was therefore reserved for ornaments. As its esteem for personal decoration grew, it naturally went from the weaker to the stronger, from the tribesman to the chief, and so it was hoarded and saved.

Almost precisely the same circumstances applied to silver after its discovery, which was later than that of gold; both metals had been employed in barter and trade, as preferred mediums of exchange, long before the first coin was made, and ages before our present monetary systems began to evolve from the use of gold and silver money. At an early date, however, much larger stocks of silver than of gold must have accumulated, because the price of the former appears to have been only a fifth of the price of gold when mining of silver was begun by the Athenians.

Nugget For a Seat

The monetary systems of the present have marvelous social utility, but they should not be deemed more remarkable than the automatic evolution of exchange in earlier times through the use of gold and silver, from which financial methods were, in turn, evolved.

The early basing of commodity-exchange upon metal was induced by prehistoric man's discovery of so-called placer deposits of gold in stream-beds of Asia, Africa, and Europe. Indestructibility and high specific gravity of the metal were important factors. In many such deposits, the gold could be seen readily, as it was in 1848 when discovered in California. Placer gold

DREDGING FOR GOLD IN CALIFORNIA

The dredge is built in a dry hole dug in gold-bearing gravel. It is then floated on water pumped for the purpose. Thus, as the dredge works, digging up and washing gravel for gold, it carries its artificial pond about with it.

may occur in tiny flakes or grains, or in nuggets of considerable size. One nugget found in California weighed nearly 1,600 ounces. Another in Australia exceeded 2,000 ounces; it was revealed by the rut made by a wagon wheel. A savage would hardly ignore such a nugget even though he had no previous knowledge of this metal. Leo Africanus, writing during the Middle Ages of a king who lived on the Gold Coast of Africa, described him as using a huge nugget of gold as a seat.

Gold is identified more readily than other metals, because they usually occur in nature in chemical compounds; the property of gold that keeps it bright and free from tarnish likewise prevents it from passing into solution, and from combining readily with other elements. It is relatively imperishable. That is why it is found concentrated in placers as a bright native metal. Glittering objects catch the eye of animals; gleaming gold must have attracted instantly the attention of primitive man. It is presumed to have been the first metal discovered by human beings, though there are no records to prove it. We only know that gold was established in use and in the esteem of man when history began.

Two other things about gold have probably been important. It is widely distributed about the earth's surface, as it occurs to some extent in nearly every country. This would tend to make all peoples acquainted with it sufficiently to account for its widespread acceptance. The other is the fact that nowhere is gold extremely abundant. Most of the time, before the present century, the increase in accumulated stocks of the metal throughout the world proceeded slowly, and the amount added each year was not sufficient to disturb the value of gold, especially as the addition would tend to be balanced somewhat by growth of population and by expansion of trade. The latter accounts for the ready absorption of enormously expanded production of gold in recent years, without pronounced effects in inflation.

Much Ado About Little

The whole fascinating story of gold, covering its occurrence, discovery, production and use, its influence upon progress and civilization, on history, the struggle of man to conquer his environment, and upon his mind, oriented to gold as a symbol of individual, national and social well-being, concerns an astonishingly small amount of this precious metal. All the gold produced in the world since the discovery of America, which probably exceeds vastly the total in the ages before, could be contained in a cube measuring less than 40 feet on each edge. In weight, this amounts to only about 38,000 short tons; over fifty times that weight of copper was produced in one year, 1929.

Think of the work and effort, the rivalry and strife, the injustice and oppression, the schemes and plots, the quarrels and fights, the battles and wars that have been involved in the accumulation and preservation, the winning and owning, of this relatively small amount of yellow metal!

A one-inch cube of gold is worth about $210; if an infantryman in the United States army carried the weight of his standard battle equipment of 71¾ pounds, in gold, he would have $21,600 worth—enough for a cube 4.7 inches on an edge. If you could carry 250 pounds on your back, you might walk away with a little over $75,000 worth of gold, which would make a cube a trifle larger than 7 inches on an edge. If you owned a 9-inch cube of pure gold, you would have over $150,000.

In more than 3½ centuries, from the discovery of America to about 1850, only 151 million ounces of gold had been produced in the entire world; but in the next 82 years, ending with 1932, 959 million ounces or 6½ times as much, was produced at a rate 28 times as fast. The earlier production came from placer mines or from gold mines that could not be worked far below the surface. Now the amount from placers is small in comparison with that from veins; vein-mines sometimes extend a mile and a half into the earth, this having been made possible by recent technologic advances in the art of mining; the story of the winning of gold is not yet finished.

You might not know that the greatest gold mine in the United States is in South Dakota; it is called the Homestake. Alaska contains the second largest. You would rightly guess that more gold has come from California than any other state. Canada produces more gold than we do; in fact, last year the Province of Ontario alone was the source of more gold than the whole of the United States. The greatest producer in Canada is the Lake Shore mine; the Hollinger stands second. About half of the gold won annually in all the world comes from the Union of South Africa; nearly two hundred and forty million dollars worth was won there last year. The greatest African mine is called Government Gold, with the Crown mine a close second. Either produces nearly 3 times as much as our largest mine.

Truly it may be said that there is a golden thread running through the embroidered tapestry of history, from dim prehistoric figures of men trading nuggets, to our own financiers and leaders of industry conducting vast transactions based upon minted gold, but it should not be overlooked that this filament of gold is interwoven throughout with one of silver, and that silver is now employed as the basis of money by Eastern peoples as numerous as those of the West who use gold for this purpose.

ASTRONOMY

Spring Commences Monday Evening, March 20

SPRING of 1933 will commmence at 8:43 p. m., eastern standard time, on Monday, March 20, according to computations made at the Nautical Almanac Office, in the U. S. Naval Observatory. At that moment, the sun, which has been travelling northwards through the sky since last December, will cross the equator, and enter the zodiacal sign of Aries. This is called the vernal equinox and at this time of year the sun is below the horizon just as long as it is above, so that days and nights are of equal length. Also, on this date, the sun rises directly east and sets due west. Spring will continue until June 21, when the sun ceases its northward journey and starts south again.

Science News Letter, March 18, 1933

PSYCHIATRY

"Babying" by Parents Linked With Mental Disease

TWO-THIRDS of a group of patients suffering from one of the most serious mental diseases were "babied" all their lives by their parents, investigators at the Rhode Island State Hospital for Mental Diseases found.

This "babying," which psychiatrists call over-protection, establishes a vicious circle in the life of the child, Dr. Jacob Kasanin said in reporting the work of himself and associates, Elizabeth Knight and Priscilla Sage, to the American Orthopsychiatric Association.

They studied 45 patients suffering from schizophrenia, a personality disorder in which the patients avoid outside contacts and retire into themselves and their world of daydreams. Dr. Kasanin did not say whether the babying caused the mental disease. That may have developed anyway. But the babying took away the only chance the patients had of developing normal personalities, he believes.

Unfortunately, these patients are very apt to be inferior children who were physically weak, or had suffered from serious ailments early in life, or had some defect like cross-eyes. They needed the extra care of their parents in order to develop and grow up. But on the other hand, receiving the extra care took away so much of their independence that it hindered their final development. Though they might be strong and healthy, they remained "tied to mother's apron strings" and unable to achieve life of their own with marriage and establishment of their own families.

While the weakness of this type of child invites the babying he gets, often the babying is increased because of problems in the parents' lives. If the father dies, the mother may put the son in his place and give him all the extra affection and attention the father would have had. If the father has been disappointed in his own life and could not get a chance to go to school, perhaps, he may try to make up for it by giving his son all the care and opportunities and benefits he missed.

Science News Letter, March 18, 1933

METALLURGY

Micro-Movie Made While Metals Melt in Tiny Furnace

MOVIES of highly heated metals about to become liquid have been produced in the Harvard metallurgical laboratory of Dr. Albert Sauveur by B. A. Rogers and L. R. van Wert.

With a small electric furnace placed under a microscope as a studio and with the camera viewing the melting scene through the microscope, the metallurgists have suceeded in recording the pictorial story of just how iron, silver and alloys of copper, nickel, cadmium and bismuth melt.

"Stills" of metals under the microscope are usual and some attempts have heretofore been made to obtain motion pictures of a specimen as it is moved within the field of a microscope. But the Harvard micro-motion pictures of metals undergoing changes are believed to be the first so far produced.

The sample of iron or other metal is highly polished in the customary way preparatory to microscopic examination, and placed in a diminutive furnace built on the stage of the microscope. An ordinary moving picture camera from which the lens has been removed is then moved up to the microscope, which magnifies 30 times. As the specimen is heated to some 2,785 degrees Fahrenheit, in the case of iron, the camera grinds, making a record of the changes in structure of the metal. Hydrogen passing over the surface prevents the formation of an oxide scale which would result upon heating in air, thus rendering visible all that goes on.

Science News Letter, March 18, 1933

IN SCIEN

ZOOLOGY

Yellowstone Beavers Use Stone in Building Dam

YELLOWSTONE Park beavers are not slaves of one material in their engineering efforts. Park Ranger F. Sheldon Dart has found a beaver dam built of stones on a small stream in the Thorofare district.

The dam is approximately six feet long and varies from one to two feet in width. It is two and a half feet high at the highest point. Only a few willow twigs appear in its construction, almost all of its material being stone. The rocks range in size from pieces as large as a man's fist to some ten inches in diameter and twelve to fourteen inches in length.

Science News Letter, March 18, 1933

ARCHAEOLOGY

Old Arabian Coins Found in Viking Graves in Germany

VIKING graves on the site of a former colony of settlers from Sweden in East Prussia have yielded new testimony to the far wanderings of these old sea-kings, in the form of a number of Arabian coins about a thousand years old. The excavation of about 200 burials was conducted by Dr. Wilhelm Gaerte, director of the Prussia Museum in Koenigsburg, who describes his findings in a communication to the German scientific weekly *Forschungen und Fortschritte*.

Besides the coins, the grave furniture included the weapons, drinking vessels and ornaments commonly given to the dead for their last journey. Part of the burials were of the bones and ashes of cremated bodies, but many of the Vikings had been buried unburned, in coffins hollowed out of logs. The presence of horses' skeletons indicated that the widespread custom of burying a warrior's horse with him was followed by these Swedish colonists of the southeastern Baltic shore.

Science News Letter, March 18, 1933

ENE FIELDS

METEOROLOGY

Records Show Long Period Of Warm Winters

MILD WINTER weather, prevailing in the eastern United States during the season of 1932-33, has continued an unparalleled record for a succession of winters with temperatures above normal, according to a statement by the U. S. Weather Bureau.

The statement says, in part:

"The records show unmistakably that the central and eastern United States are and have been for a number of years in the midst of a period of prevailing warm weather which has continued much longer than any other similar period of record, notwithstanding the occurrence of relatively short periods of subnormal temperatures, such as the winter of 1917-1918, and the brief spells of extremely cold weather that occurred in December and February, last. For example, at St. Louis 12 of the last 13 winters have had above-normal temperature; at New York 10 of the last 13, with the past six winters all above normal; while at Washington, D. C., this makes the thirteenth successive winter with mean temperature above normal."

Science News Letter, March 18, 1933

PHYSIOLOGY

Catching Cold Depends on Body's Heating System

WHETHER your body has a good heating system or not decides how easily you will take cold this spring, Dr. P. Schmidt, prominent German hygienist, told a correspondent of the American Medical Association.

Dr. Schmidt had noticed for many years, that under the same circumstances, some people take cold much more easily than others. Now, using human beings as guinea pigs, he has found out why.

Under his guidance a large number of persons exposed themselves to cold until they were thoroughly chilled. Then he measured their skin-temperature at several intervals until they had all returned to normal. He discovered that most of them regained normal skin temperature in a very short time. Some, however, were much slower to warm up to normal, and thus took cold.

The reason for this, says Dr. Schmidt, is the contraction of the blood vessels and tissues at a low temperature. When contracted they are much less able to fight off germs and bacteria, just as an army of men when cramped into close quarters are unable to fight efficiently. So the persons whose temperature remained low over a long period of time gave the germs a chance to get the upper hand.

Only one-tenth of all those tested had slow temperature reactions, which should mean that only one-tenth of all people are naturally subject to colds. When you catch a cold, if you belong to the other nine-tenths, it means that your heating system is temporarily out of order because of nervous or psychological conditions or because a prolonged unperceived draft has cooled off your bodily radiators. That last is why people have learned to think they catch cold from drafts. They do indeed, though indirectly.

Persons whose heating systems are ordinarily slow, says Dr. Schmidt, can speed them up by spending a great deal of time out of doors.

Science News Letter, March 18, 1933

BIOLOGY

Australian Ants Likened To Poisonous Snakes

"BESIDES the poisonous snakes, they are really the only formidable 'animals' in the Australian Bush."

Thus Prof. William Morton Wheeler of Harvard University characterizes the Australian "bulldog" ants, in a new book. Prof. Wheeler describes these fierce insects as sometimes more than an inch in length, "singularly alert, wasplike, large-eyed, long-jawed, and fiercely stinging."

Primitive ants of Australia, he states, differ from ants of other continents in their colony-founding methods. The queen ant, at the outset of her career, does not accept the permanent imprisonment which is the fate of her sisters elsewhere, but from time to time breaks through the wall of her cell and goes out to forage for her young. When she returns she seals herself in again, and after the colony has made a good beginning she settles down to being permanently house-bound.

Science News Letter, March 18, 1933

PUBLIC HEALTH

Best Health Record Made On Reduced Budget

PUBLIC HEALTH need not suffer when budgets are reduced. Evidence of this is found in Chicago.

In that city during 1932 the infant death rate and the general death rate were reduced below the records of any other year, although the health department budget was reduced $500,000 in this one year. For a cosmopolitan as well as metropolitan center like Chicago, the American Medical Association considers this an achievement of the first magnitude. It may be an inspiration to other public officials faced with budget economies.

Incidentally, it was pointed out, the employees of the health department, like other employees of the city of Chicago, are serving with their salaries many months in arrears.

Science News Letter, March 18, 1933

ARCHAEOLOGY

French Expedition Seeks Syrian Ancient History

THE FRENCH archaeological mission to Ras Shamra, which has been unearthing important writings and ruins, is to start another season of digging up ancient history, this spring. Prof. F. A. Schaeffer of the University of Strasbourg is director of the expedition.

Ras Shamra, Syria, north of Palestine, gained the spotlight in archaeological circles when Prof. Schaeffer found a library of tablets there, written in an alphabet script, in an unknown dialect.

Among the latest discoveries at the site is a tall tablet bearing a picture of the mighty god Baal, brandishing a club and thunderbolt. Prof. Schaeffer pronounced this one of the finest representations of this ancient city deity known.

Another recent discovery is a polychrome head of a woman wearing spitcurls on cheek and forehead. The coiffure shows what was fashionable in this part of the world about 1400 B.C.

Prof. Schaeffer has excavated richly furnished tombs in the cemetery of the city, as well as temples and other buildings in two strata of the earth. A third, deeper layer remains to be explored, and is expected to carry the history of this picturesque city back toward 3000 years before Christ.

Science News Letter, March 18, 1933

GEOGRAPHY-NAVIGATION

Icebergs in the North Atlantic

"A Classic of Science"

Former Governor of Greenland Describes Icebergs' Birth Captain Tells How Vessels May Avoid Ice Collision

DANISH GREENLAND, ITS PEOPLE AND ITS PRODUCTS, by Dr. Henry Rink. Edited by Dr. Robert Brown. London: Henry S. King & Co., 1877. This is an exact reprint of extracts from the original English publication.

A DESCRIPTION of the monstrous fragments of ice which are called "bergs" has so frequently been repeated in the accounts of arctic voyages, that we need only in a few words mention their size and general occurrence on the ocean. What in the Greenland sea is called an *ordinary large iceberg* rears its walls from the surface of the water either to a height of from 60 to 100 feet, with a somewhat horizontal surface, or in a more conical shape ending in pointed summits or ridges, in which it often rises 150, sometimes 200, and more rarely 300 feet, or even more, above the level of the sea. The circumference is from several hundred to some thousand yards. These dimensions only refer to the visible part of the floating block—viz., the top of it emerging from the sea. Considering that seven or eight times as much lies under the surface of the water, the whole bulk of an ordinary large berg must be calculated to have a thickness or height of several hundred or even of a thousand feet, and its weight must be counted by millions of tons. In short, the visible portion of a large iceberg equals the largest buildings made by human hands, and its whole bulk is only to be compared with mountains. The icebergs, being in a manner themselves fragments, are liable to break asunder and produce more fragments. For this reason the same kind of ice that constitutes the ordinary large bergs occurs in pieces of every size inferior to that of the bergs here described. Every bursting asunder of glaciers or bergs by which fragments are discharged is called calving, and the fragments *calves* or *calved ice*. The latter expressions consequently also comprise icebergs, but are chiefly applied to masses too small to be called bergs. There is, however, no sharp distinction to be made between large and small icebergs and mere calves.

Floating icebergs are scattered over the Atlantic to an amazing extent. Numbers of them annually reach the shores of Newfoundland, and the fishing banks off this island are not unfrequently crowded with them. But stragglers occasionally travel as far south as the latitude of Spain, and one berg is said to have been met with on June 18, 1842 in 38°40′ N. La., measuring 100 feet in height and 170 feet in breadth. The whole mass of these strange productions, of a nature so widely differing from that of the regions over which they spread, have their sources in Greenland, are moreover *exclusively discharged from the inland ice* above described, and only emerging from a limited number of narrow branches protruding from it into the sea. The icebergs thus issuing from Greenland are mostly drawn southwards on both sides of this country, without spreading very far to the east and west of it over the rest of the arctic seas.

Glaciers in general have their origin in the snow on the mountain-tops which grows and slides down their sides, and are partly at least pushed on by the direct force of gravity. When they abut on the sea, and their icy walls are constantly washed and undermined by the waves, their projecting parts will of course be dismembered, and fragments will be thrown off and drifted away. This process is going on in numerous places along the arctic shores, but however considerable the fragments may be in many instances, we are still far from having accounted for the manner in which a large iceberg can be launched and set afloat. It is the margin of the inland ice dipping into the sea in certain places, and being broken asunder, which gives rise to this phenomenon.

On the coast which we here particularly treat of—viz., the Danish part of the west coast—these places lie hid at the heads of the fjords or behind islands, while on the same tract many stupendous glaciers present themselves from the ocean, and may give rise to the supposition that bergs are issuing from them. Bearing in mind that the fragment to be detached measures upwards of a thousand feet in thickness, as well as in breadth and length, the solid mass from which it has been severed must likewise be supposed to have at least the same thickness. If the fragment has to be loosened chiefly or more directly by the force of gravity, the main body must rest upon a ground sufficiently smooth and inclining. But in this case it would seem more likely to break asunder gradually, and we should have reason to believe that small pieces would almost continually be detached and rush down the sloping ground, whereas we can hardly imagine how so fragile a mass can be dismembered into parts of a mountain's magnitude. Moreover, granting this to be possible, there seems little probability that such blocks should come rushing down and reach the sea in an unbroken state. Finally, to be properly launched and set afloat they would require an extraordinary depth of water immediately outside.

All these difficulties will disappear when we regard the process which actually goes on in the interior of those inlets which, by reason of the bergs they

Following the sinking of the "Titanic" by collision with an iceberg April 14-15, 1912, England and the United States sent ships to patrol the southern edge of the ice field and report by wireless all icebergs near the transatlantic steamer lanes. The following spring the U. S. Coast Guard sent the revenue cutters "Seneca" and "Miami" to take up the work, and in the fall of 1913 the International Ice Patrol was established.

Shall we have synthetic beefsteak?

Emil Fischer

who analyzed and synthesized proteins will tell what they are

IN THE NEXT CLASSIC OF SCIENCE

produce, are termed *icefjords*. In reality the force of gravitation seems to have no direct influence at all in loosening the bergs from the firm ice, and even the movement of the glacier itself seems only in a small degree to be promoted by the inclination of the ground. The projecting and advancing branch of defluent of the inland ice that has taken its way down to an icefjord, and which might more specifically be called a glacier, continues sliding along the bottom of the sea until it reaches a certain depth where the buoyant action of the water begins to lift it and keeps its outermost part in suspension. In the sheltered waters of the said inlets the huge mass may still be pushed on for several miles without resting on the ground or losing its coherency. Being kept in suspension by the buoyant power of the water, it presents a nearly horizontal surface like the frozen sea. But from time to time, external or accidental causes, such as, for instance, the tides in particular, will be apt to cause fissures to be formed, and the foremost part to be detached and go adrift. The results of this breaking asunder are the bergs. Consequently they are by no means formed by any "launch" or "fall," but in a manner more in accordance with the breaking up of a frozen sea. The displacement of the water caused by the calving of the glacier is, however, violent enough to cause great disturbances.

As Seen by the Ice Patrol

STATISTICS AND DEDUCTIONS FROM OBSERVATIONS AND REPORTS ON THE ICE SITUATION, SEASON OF 1913. *By Capt. C. E. Johnston, U.S.R.C.S., of the "Seneca". In Reprint of Hydrographic Information from the Pilot Charts and Hydrographic Bulletin published by the United States Hydrographic Office under authority of the Secretary of the Navy. No.* 24. *Washington, D. C., October* 24, 1913.

The largest berg we saw was about 400 feet long by 300 feet wide by 70 feet high out of water; the smallest was about 225 feet long, 100 feet wide, and 35 feet high. All were white in color, some having one or more distinct veins of blue ice running through them, these veins running from 18 inches to 6 feet in width. As to shape no two bore any striking resemblance to each other. There were round tops, flat tops, sloping tops, and pinnacled tops; sloping sides, sheer sides, craggy sides; regular shapes and extremely irregular shapes. The only type we did not see is the kind popularly pictured in school books, with high, overhanging, craggy pinnacles. I have read in recent newspapers of ships reporting bergs half a mile long and 300 feet high. I am not prepared to refute such statements, but we saw nothing of that size. I estimate 150 feet as the highest berg we saw. It looked at a distance like the picture of Matterhorn.

LION-FACED ICEBERG

Floating masses of ice have individuality, and sometimes take fantastic shapes. This one was photogrphed by the International Ice Patrol's expedition aboard the "Marion" under Commander Edward H. Smith in 1928, with studied exhaustively the sources of the North Atlantic's bergs. The report of this expedition is in itself a classic.

Visibility of Ice

The greatest distance we observed ice was 18 miles. The day was clear, with light easterly winds and a tendency to mirage. It seemed to suddenly jump into view, and could be plainly seen from the bridge as soon as from the crow's nest. On ordinary clear days the average berg can be seen 12 to 15 miles from the bridge, about a mile farther from the crow's nest, and a mile still farther from the signal yard. On a cloudy day, with good visibility, deduct about 2 miles from the foregoing. In clear weather, with hazy horizon, we have seen a big berg 11 miles, its top being visible well above the horizon; in light fog, 2 miles; dense fog, 200 yards; drizzling rain, 2½ miles. In bright moonlight, with naked eye, 2½ miles; moon shining through thin mackerel clouds, 2 miles; starlight, 1 mile with naked eye, 2 miles with glasses; overcast and dark, but with horizon visible, one-half mile with glasses. In the last case the berg looms up dark; in the other cases its effulgence shows lighter than the surrounding space. With the searchlight we were able to see a berg about 3 miles on a dimly moonlight night, and 2 miles after the moon set. In using the searchlight we found that an observer standing behind or under the beam could see practically nothing, but that 15 feet away to one side he could see readily. With the beam turned on a berg abreast the ship and 2 miles away, I could see it as plainly as an illuminated store front from the quarterdeck, about 100 feet abaft the light. Another point to be noted is that the beam must be drawn to a fine focus. A flaring beam blinds the observer. Owing to the blinding effect of a searchlight on the observer, I should not recommend its general use for a vessel under way. *On a dark night or in thick weather a vessel in the vicinity of bergs should slow so as to be able to maneuver within the limit of visibility.*

A berg may or may not give an echo. If its sides are steep or perpendicular an echo will probably be heard from some directions, but not from others, according as the face presented to the ship is normal or slanting. Any slanting face will reflect sound away. We were not successful in getting echo farther than half a mile. About 90 per cent of our attempts were without result. The existence of an echo indicates an obstruction, but its absence proves nothing. In one case we were between a berg and a growler; the growler gave an echo, but the berg none.

Sudden changes of temperature mean nothing, so far as bergs are concerned. The sea water is streaky, as a rule, and where its temperature is constant we found no change up to a ship's length of a berg. The (*Turn Page*)

coldest water we found was 31°, on the tail of the Bank, in April, about 100 miles from the nearest ice. . . .

In a light, low fog an observer can see a berg from aloft sooner than from deck, but in a dense fog we found that the lookout was best kept from the spar deck, as the first sight of the berg was the lapping of the water on its base.

Speaking about lookouts, it occurs to me that on a very large ship, with decks some 70 feet above water, bridge some 20 feet higher, and lookout posted higher up still, the lookout might well be higher than the top of a small berg; and hence on a dark night he would have an unobstructed view of the horizon over a berg half a mile or a mile away. In that case he might easily miss seeing the obstruction until too late to avoid it.

As a rule, we found little or no change in temperature of the air near a berg.

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SEISMOLOGY

Quake Centers on Sea Bottom Where Mountains are Growing

From Page 163

tially destroyed some weakly constructed buildings. But the great earthquakes of Los Angeles recorded in history occurred in 1769, 1852 and 1855.

Four violent shocks, on July 28, 1769, with strong aftershocks on five days following, are listed in the records of the California missions. This earthquake was probably strongest along San Pedro Bay near the present harbor of Los Angeles. This is the location of the present earthquake center.

October and November, 1852, brought many earth shocks to the southern California of gold rush days. October 26 saw eleven severe shocks at Los Angeles. On July 10, 1855, a quite severe earthquake did considerable damage in Los Angeles.

The ocean region off the San Pedro-Long Beach coast near Los Angeles lying between the coast and Catalina Island is known as San Pedro Channel. Geologists describe it as the San Pedro submarine fault zone and they know that this is an area where the mountains are growing. It is probable that the recent earthquake was caused by a crustal adjustment in this area under the sea.

Although aftershocks from the earthquake will be felt for months, the disturbance was not a general one and probably did not relieve the strain in the earth's crust in other parts of Southern California. This is the opinion of Prof. Bailey Willis, eminent authority on geology and seismology who is professor emeritus at Stanford University.

There is, therefore, continued danger of severe earthquakes in Southern California. When these will come, whether tomorrow or a decade or more from now, neither Prof. Willis nor other geologists can attempt to predict.

"The Long Beach earthquake appears to be a shock of moderate intensity on one of the several faults of the San Pedro fault zone," Prof. Willis said in response to a Science Service inquiry. "This fault zone was recognized by H. O. Wood, who described it in the Bulletin of the Seismological Society, 1916, in his account of the 1812 quake.

"Among the effects of movements on that zone we may recognize the elevation of the San Pedro point which is terraced by marine benches up to more than 1000 feet above sea and demonstrates activities extending back more than a million years. The zone has the earthquake habit and may be expected to behave accordingly from time to time as in the past.

"Aftershocks are likely to continue for several months and some of them may be strong. Measures of safety should be rigidly enforced. Although locally disastrous this Long Beach shock is not a general one and probably does not relieve the strain in the San Jacinto or San Andreas faults.

"The disaster emphasizes the need of earthquake resistant buildings under a reasonable building code recognizing earthquake hazards."

The San Andreas fault is the long cleavage in the earth's crust which runs from north of San Francisco along the coast to northwest of the Los Angeles region inland. Along this fault the great 1906 San Francisco earthquake occurred. The San Jacinto fault is to a certain extent an extension of the San Andreas fault southward of it.

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SIESMOLOGY

Earthquake Was Not Noticed By Einstein

PROF. Albert Einstein walked through the earthquake and did not notice it. He had just emerged from a California Institute of Technology building after attending his last seminar with Pasadena scientists before leaving for New York. Walking with Dr. Beno Gutenberg, the eminent authority on seismology, both he and Dr. Gutenberg were so absorbed that they said later they had not noticed the earthquake. This was ironical because Dr. Gutenberg had never before had an opportunity to experience an earthquake.

Prof. Einstein had a few hours previously announced that he would not return to Germany because he prefers to live where freedom prevails. He will spend next summer in Oxford and return to his new position at Princeton next fall.

Buildings of the California Institute of Technology at Pasadena creaked and swayed greatly in the earthquake but no damage was done to these structures especially designed to withstand earthquakes.

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A piece of silk goods which lay for ten years in the sunken steamship Egypt was recently examined and reported to have "no injuries as to resistance, feel, or luster, and only a slight loss of color in some places."

RADIO

The Science Service radio address next week will be on the subject

APPLIED GEOGRAPHY

by

Dr. Isaiah Bowman

Director of the American Geographical Society

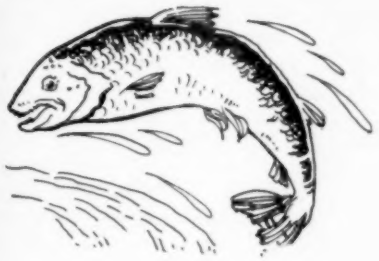
FRIDAY, MARCH 24

at 12:45 P. M. Eastern Standard Time

***Over Stations of* The Columbia Broadcasting System**

MARINE BIOLOGY

NATURE RAMBLINGS *by Frank Thone*



All Fish Is Diatoms

THAT all flesh is grass, we are constantly being assured both by moralists who like to quote Scripture and by physiologists who want to keep us well reminded of the interdependence or animal and plant kingdoms.

And it is true enough, that the roast smoking on the table was originally grass, just as the bread we shall consume with it is made from the seeds of other grass. But come next Friday, and the grass-produced flesh is replaced by a pièce de résistance that is not made of grass. Fish harks back to an ultimate vegetable origin no less than flesh, but it is in debt to an entirely different class of plants.

The "pastures of the sea" are made up mainly of diatoms, which are one-celled plants that can be perceived by the naked eye when millions of them are concentrated together, making the water green and scummy-looking. In their normal distribution they cannot be seen at all without the aid of a compound microscope.

But they do exist in the ocean in uncountable billions, and there are no waters anywhere on the globe that are without them. There are hundreds of species, some of them of rare beauty. In most places they form the dominant vegetable part of the drifting life-complex of the sea, for convenience called "plankton" by ocean-studying scientists. Sometimes that dominance is upset temporarily by other one-celled plants or animals, but for the most part the diatoms rule.

And they are eaten in their uncountable billions by all manner of little sea animals: gobbled by flea-sized relatives of crab and lobster, snatched by sea worms, strained out of the water by oysters and clams. We in our turn eat the oysters and (*Turn to Page* 175)

PUBLIC HEALTH

Poor Health Record For 1933 Indicated by Early Reports

THE GOOD HEALTH records for the United States and Canada maintained during the last few years will probably not be continued in 1933. Judging from the January death reports, the health outlook for the coming year is anything but promising, officials of the Metropolitan Life Insurance Company point out.

The January, 1933, death-rate of 10.8 per thousand is the highest recorded for the first month of any year since 1929, and with the exception of 1929 it is the highest for more than a decade.

Influenza and pneumonia were responsible for nearly one-fifth of all the deaths during January, 1933, the company's figures showed. In addition, deaths from cancer, diabetes, cerebral hemorrhage, heart disease and suicides increased sharply over the deaths from these causes a year ago.

The death-rate for diabetes reached a new high figure in January, 1933, which has never been even closely approached in any month of any preceding year. This is thought to be the result of the influenza epidemic. Diabetics who become victims of influenza are frequently without sufficient resistance to withstand both diseases, the report explained, and their deaths occur during the influenza outbreaks instead of later.

"A number of years have made excellent health records despite bad beginnings," the company's officials recalled in their report.

The year 1929, which started with a bad influenza outbreak was given as a conspicuous example.

"Nevertheless health conditions from now on will need to be exceptionally good to counterbalance the January setback and to establish a record for the year at or near the remarkably low mortality figure for 1932."

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A poultry disease known as range paralysis, the cause of which is unknown, is taking increasingly heavy toll in Ohio poultry flocks.

A stroke of lightning completely stripped the bark off a big willow oak tree at the Government agricultural farm near Washington, last summer.

Study Nature

● Nature Camps — conducted by Pennsylvania State College Summer Session—for teachers and naturalists. Picturesquely located in mountains of Central Pennsylvania, where wild life abounds.

FIRST CAMP
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•First Glances at New Books

Additional Reviews On Page 176

General Science

SCIENCE IN THE CHANGING WORLD—Julian Huxley, Bertrand Russell, Hilaire Belloc, J. B. S. Haldane, Sir Oliver Lodge, John Baker, Sir Thomas Holland, Hugh I'A. Fausset, and H. Levy—*Century,* 286 p., $2. Radio talks on science by leading British scientists. Prof. Levy answers: "What is Science?" in six chapters. Prof. Huxley and Mr. Baker discuss "What is Man?" while the other speakers explain what they consider civilization.

Science News Letter, March 18, 1933

Archaeology-Industrial Art

A STUDY OF PERUVIAN TEXTILES—Philip Ainsworth Means—*Museum of Fine Arts, Boston,* 83 p., 91 figs., $2.75. A short introductory course on the textile art of Peruvian Indians. It is very informative, and will interest students of design and of textiles no less than archaeologists. For illustrative material, the author uses 67 of the Peruvian textiles in the important collection at the Boston Museum.

Science News Letter, March 18, 1933

Psychology-Education

THE EXPERIMENTAL STUDY OF READING—M. D. Vernon—*Cambridge University Press,* 190 p., $3. An account of the experimental work in various fields which has bearing on the psychology of reading. Factors affecting eye movement, perception in reading, perception of children, special reading difficulties, and typographical factors are among the matters discussed.

Science News Letter, March 18, 1933

Sociology

PROCEDURE IN GIVING RELIEF TO FAMILIES OF THE UNEMPLOYED—*Family Welfare Association of America,* 16 p., 15c.

Science News Letter, March 18, 1933

Physics-Education

COOPERATIVE EXPERIMENTATION IN MATERIALS AND METHODS IN SECONDARY SCHOOL PHYSICS—Archer Willis Hurd—*Teachers College, Columbia University,* 60 p., 60c.

Science News Letter, March 18, 1933

Plant Pathology

MANUAL OF PLANT DISEASES—F. D. Heald—*McGraw-Hill,* 953 p., $7.50. A second edition, brought up to date, of an unusually complete and well-arranged book, suitable for the agronomist and forester as well as for the teacher and research worker. A unique feature of especial value is the grouping in the first part of the book of plant diseases according to causative ecological factors, such as water relations, temperature, manufactures, etc. The balance of the volume groups plant diseases according to the taxonomic position of the pathogenes.

Science News Letter, March 18, 1933

Travel

THREE KINGDOMS OF INDO-CHINA—Harold J. Coolidge, Jr., and Theodore Roosevelt—*Crowell,* 331 p., $3. An interesting, brightly written book of travel in a little-known corner of the world, which appears as a kind of by-product of the Kelley-Roosevelts Expedition of the Field Museum.

Science News Letter, March 18, 1933

Civil Engineering-Forestry

MODERN CONNECTORS FOR TIMBER CONSTRUCTION—National Committee on Wood Utilization and Forest Products Laboratory—*Govt. Print. Off.,* 147 p., 15c. In Europe metal rings, plates or wood disks are used as connectors to strengthen and increase the efficiency of timber joints. This publication is designed to bring to America the best of the technique developed abroad. Radio towers 330 feet high and buildings with wide spans have been successfully constructed from wood through the use of these connectors.

Science News Letter, March 18, 1933

Psychology-Biology

MATERNAL BEHAVIOUR IN THE RAT—Bertold P. Wiesner and Norah M. Sheard—*Oliver and Boyd,* 245 p., 12s. 6d. Experiments as described were designed to reveal the physiological basis for maternal behavior. The study was undertaken primarily, the authors state, in order to analyze the relation between pseudopregnancy and maternal behavior.

Science News Letter, March 18, 1933

Physiology

CHEMICAL WAVE TRANSMISSION IN NERVE—A. V. Hill—*Macmillan,* 74 p., $1.25. One of the leading physiologists of England sets forth the results of his application of electrical research methods to the problems of nerve action.

Science News Letter, March 18, 1933

Medical Economics

THE FUNDAMENTALS OF GOOD MEDICAL CARE—Roger I. Lee and Lewis Webster Jones with the assistance of Barbara Jones—*University of Chicago,* 302 p., $2.50. Publication of the Committee on the Costs of Medical Care.

Science News Letter, March 18, 1933

Medical Economics

SURVEYS OF THE MEDICAL FACILITIES IN THREE REPRESENTATIVE SOUTHERN COUNTIES—C. St. C. Guild—*University of Chicago Press,* 173 p., $1. Publication of the Committee on the Costs of Medical Care.

Science News Letter, March 18, 1933

Medical Economics

ORGANIZED MEDICAL SERVICE AT FORT BENNING, GEORGIA—I. S. Falk—*University of Chicago Press,* 119 p., 90c. Publication of the Committee on the Costs of Medical Care.

Science News Letter, March 18, 1933

Child Hygiene-Nutrition

MILK PRODUCTION AND CONTROL—*Century,* 392 p., $3. A publication of the White House Conference on Child Health and Protection.

Science News Letter, March 18, 1933

Legal Medicine

POSSIBILITIES AND NEED FOR THE DEVELOPMENT OF LEGAL MEDICINE IN THE UNITED STATES—Oscar T. Schultz—*National Research Council and National Academy of Sciences,* 135 p., $1.50. Bulletin No. 87 of the National Research Council.

Science News Letter, March 18, 1933

Genetics

CHROMOSOMES AND PLANT BREEDING—C. D. Darlington—*Macmillan,* 112 p., $1.75. Includes some of the latest results of researches, that have not yet found their way into the bigger books.

Science News Letter, March 18, 1933

Entomology-Medicine

MEDICAL ENTOMOLOGY—Robert Matheson—*Thomas,* 489 p., $5. Insect vectors and the pathogenes they carry are treated in the order of their phylogenetic relationships, with a final chapter on arthropods that are direct causes of ailments through their own poisonous or irritating qualities. Each chapter is provided with a list of references to its special literature, and there is a good index.

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clams, so that in this case the cycle from diatom to man is very short.

But in most cases it takes a little longer. The tiny relatives of crab and lobster, and the other diatom-eating animals, are eaten by other and larger animals: small fish, squid, etc. These become the prey of still larger swimming traps. After three or four or half-a-dozen such reincarnations, the diatoms at last reach our tables, in the form of codfish or halibut or flounder or mackerel or tuna. But whatever the disguise, the origin is the same.

All fish is diatoms.

Science News Letter, March 18, 1933

PALEOBOTANY

Trees Still Petrifying In Yellowstone Park

TREE STUMPS now undergoing the process of petrification are an interesting sight in the Upper Geyser Basin, in Yellowstone National Park.

On the north side of Old Faithful there are at least six or eight stumps in which the wood-fibers have been found to contain a large amount of silica. Evidently this silica is being deposited at intervals from the geyser water, according to Park Naturalist C. Max Bauer. The petrification of the stumps is a very slow process.

The Yellowstone already has an interesting display of fossil forests located over extensive areas in the northern part of the park. These, however, are the result of successive outbreaks of volcanic activity in the past. What happened in these cases apparently was that a standing forest was engulfed in great clouds of volcanic dust until the trees were completely buried. Water seeped through this dust and into the buried trees, carrying with it silica from the volcanic ash. The woody structure of the trees was dissolved and the silica deposited in its place. The trees thus became fossilized.

Long afterwards, when the volcanic activity had quieted and sufficient soil had accumulated on top of the buried trees, another forest grew, only to meet the same fate. This happened again and again.

Today, at Specimen Ridge in the northeast portion of the park, trained observers can distinguish in some places a succession of these forests, twelve in number, one above the other.

Science News Letter, March 18, 1933

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Biography

FIGHTING THE INSECTS—L. O. Howard—*Macmillan,* 333 p., $2.50. Subtitled "The Story of an Entomologist," this latest of Dr. Howard's books combines, in the easy, rambling, reminiscent style that makes his conversations and informal lectures a delight to all who have ever heard him, his own personal biography and the history of the rise of economic entomology in the United States, in which he, as the builder of the Bureau of Entomology, played a leading role. But the book is no mere catalog of insects and pursuers of insects. Dr. Howard's appetite for life has been too catholic for that, his travels too wide and his residence in Washington too long and full of contacts. Diplomats and doctors, poets and priests, artists and admirals march in the parade of his memory; for each he has an ancedote that will make you chuckle.

Science News Letter, March 18, 1933

Microscopy

SEEING THE UNSEEN—Robert Disraeli—*John Day,* 142 p., $2. A book of photomicrographs with explanatory text, giving young beginners in the fascinating art of microscopy some idea of the widespread wonder world that lies awaiting their lenses.

Science News Letter, March 18, 1933

Nature Study

BIRDS THE INDIANS KNEW—Lena C. Ahlers—*Albert Whitman,* 248 p., $2. A book for children, combining bird lore and folk lore, most of it from American Indian sources, but some from other peoples.

Science News Letter, March 18, 1933

Bacteriology

MANUAL OF MICROBIOLOGY—W. L. Obold and Margaret M. Diehm—*F. A. Davis,* 140 p., $1.25. Laboratory instructions for a beginning course in bacteriology.

Science News Letter, March 18, 1933

Education

EDUCATIONAL YEARBOOK OF THE INTERNATIONAL INSTITUTE OF TEACHERS COLLEGE, COLUMBIA UNIVERSITY, 1931—Ed. by I. L. Kandel—*Teachers College, Columbia Univ.,* 721 p. $4.50. Education in the world's colonial dependencies is discussed. Most of the chapters are by directors of education and other officials of foreign governments. The introduction aptly suggests that these colonies are, in a way, laboratories where educational theory can be tested under simpler, more controlled conditions. The education of islanders and other colonials is therefore, he argues, of real interest to educators in established centers.

Science News Letter, March 18, 1933

Anthropology

MEDIEVAL FAITH AND FABLE—J. A. MacCulloch—*Marshall Jones, Boston,* 344 p., $4. A notable collection of beliefs from an age when preternatural or supernatural explanations had to be found for phenomena for which no natural explanations were forthcoming, when control by magic had to be attempted in lack of control by science or technology, when a livelier faith in the supernatural order was followed about and counterfeited upon by equally lively superstitions. We may smile at many of these things, but let our smile be not too superior in a day when astrologers still ride in better motor cars than astronomers can afford!

Science News Letter, March 18, 1933

Philosophy-Psychology

SIX THEORIES OF MIND—Charles W. Morris—*University of Chicago Press,* 337 p., $4. The six theories, which are discussed in impartial fashion are the mind as: Substance, process, relation, intentional act, substantive, and function.

Science News Letter, March 18, 1933

Zoology

THE SALTATORIAL RODENT DIPODOMYS: THE FUNCTIONAL AND COMPARATIVE ANATOMY OF ITS MUSCULAR AND OSSEOUS SYSTEMS—A. Brazier Howell—*Amer. Acad. Arts and Sci.* 159 p., 1 pl., $2.20.

Science News Letter, March 18, 1933

Chemistry

QUALITATIVE ANALYSIS—J. S. Long, H. V. Anderson and T. H. Hazlehurst—*Prentice-Hall,* 266 p., $2.25. A revised edition.

Science News Letter, March 18, 1933

Aviation-Meteorology

THE BOOK OF THE SKY—M Luckiesh—*Dutton,* 335 p., $3. vised and enlarged edition of a first published in 1922. Dr. Luc who is director of the Lighting Re Laboratory of the General Electric pany, explains that we live with th sky much more than with the nig of stars. Clouds, winds and w have always been important but th growing more so with the advan aviation and air travel. He has ' mingled both the earthly and the viewpoint as a means of seeing the various aspects of the sky. Li' facts have been intermingled wi cies and feelings."

Science News Letter, March 18

Archaeology

ARCHAEOLOGICAL EXPLORATIO A ROCK SHELTER IN BREWSTER C TY, TEXAS—Edwin F. Coffin—*A of the American Indian, Heye F tion,* 72 p., 75c. Excavating a rock ter in Bee Cave Canyon, Mr. found evidence of intermittent oc tion, apparently in summer cam The shelter is one discovered by Harrington in 1928, and partia plored at that time.

Science News Letter, March

Psychology

THE STORY OF SCIENTIFIC CHOLOGY—Adelbert Ford—*Sears,* p., $3. A book written for the lay presenting something of the dra history of psychology as well as it ern teachings.

Science News Letter, March 18,

Engineering-Economics

TECHNOCRACY—*Angelus Press* p., 20c. One of the pamphlets duced to answer the popular de that raged about the first of the

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Engineering

PROBLEMS IN MACHINE DRAWI Rufus B. Felten—*McGraw-Hill,* p., $1.90. A text for college use taining many practical examples industry.

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